

NIOSH eNews

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From the Director's Desk

SARS has become a familiar term in our vocabulary. Most people are more likely to recognize the acronym than the full name it represents, Severe Acute Respiratory Syndrome.

As part of the international response to SARS, the National Institute for Occupational Safety and Health (NIOSH) has applied its scientific expertise, public health credentials, and practical workplace experience to help reduce the threat of the disease as an occupational health hazard in the U.S. and elsewhere. In the featured article that follows in this edition of "eNews," Richard Ehrenberg, M.D., Senior Scientist in NIOSH's Atlanta Office, discusses our various initiatives that have helped reduce the risk of occupational transmission.

Dr. Ehrenberg has the day-to-day responsibility for coordinating our strategic SARS Response Program, which incorporates efforts by numerous, dedicated NIOSH employees. Those employees include scientists from NIOSH's Hazard Evaluations and Technical Assistance Branch, who have provided their services on the ground in Canada and Taiwan in the world-wide efforts to prevent SARS transmission.

John Howard
Director



Dr. John Howard
Director, NIOSH

SARS, the Workplace, and the NIOSH Response

by Richard Ehrenberg, M.D.
NIOSH Senior Scientist

SARS

Severe Acute Respiratory
Syndrome (SARS)

From the moment that the first SARS cases were reported earlier this year, public health professionals realized that strategic action was needed to contain this emerging disease. NIOSH mobilized early on to help meet this challenge.

NIOSH recognized that the disease had the potential to spread within the workplace, especially for workers who care for, or have contact with, SARS patients. Those categories encompass such occupations as health care employees, medical transport employees, airline personnel, and laboratory technicians. Working with our colleagues at the other centers and institutes of the U.S. Centers for Disease Control and Prevention (CDC), and with our other partners in occupational and public health, we rapidly took a number of steps to help identify the scope of potential risk and to provide timely information and assistance:

- NIOSH quickly posted a new SARS site on its web page to provide employers, employees, occupational health professionals, and others with timely information. The site <http://www.cdc.gov/niosh/topics/SARS/> is a living resource that NIOSH updates to reflect new findings and information.
- Applying our experience with the use of personal protective equipment in health care settings, we participated in the development and dissemination of CDC's interim occupational health guidance for using respiratory protection and other personal protective equipment to prevent SARS transmission. The guidelines are posted on the CDC web site at <http://www.cdc.gov/ncidod/sars/respirators.htm> and at <http://www.cdc.gov/ncidod/sars/aerosolinfectioncontrol.htm>.
- Responding to concerns about potential risk to airline crews, maintenance personnel, and other transportation employees, NIOSH also participated in the development of CDC interim guidelines for airline flight crews, airline cleaning crews, personnel who handle cargo, air medical transport personnel, and employees who interact with passengers from areas where SARS cases have occurred. NIOSH, along with CDC colleagues, also hosted a conference call with representatives of the airline industry and air crew unions to discuss these recommendations. All of these guidelines are available on line at <http://www.cdc.gov/ncidod/sars/airpersonnel.htm>.
- NIOSH met with respirator manufacturers to address concerns that the demand for NIOSH-certified N-95 respirators to protect health care employees against SARS transmission might outrun supply. As part of a search for practical solutions to the problem internationally, NIOSH asked the World Health Organization (WHO) to emphasize that some respirators certified by governments in other countries provide protection equivalent to N-95s, and advised WHO regarding revision of their posted recommendations for respiratory protection.
- NIOSH dispatched industrial hygienists from its staff as part of CDC teams that responded to requests for assistance from Canada and Taiwan.

- NIOSH helps staff the CDC's Emergency Operations Center (EOC). The EOC has been the coordinating center for CDC's response to SARS as well as a "gateway" for answering telephone calls and queries from both health professionals and the public. Numerous NIOSH staffers have rotated through the EOC or have served as co-leads of the EOC Occupational Team. The CDC Emergency Response Hotline (24 hours) is (770) 488-7100 or visit the CDC SARS website <http://www.cdc.gov/ncidod/sars>.

The situation remains uncertain as the SARS story continues. The outbreak appears to be contained in some areas, but others continue to struggle with new outbreaks, including cases among health care workers caring for SARS patients. Thus far, the U.S. has been affected only to a limited extent, but this could change at any moment. We do not know whether the disease will become established, possibly posing a seasonal threat as does influenza, or whether a SARS vaccine may become available as a primary strategy to protect exposed workers. Whether or not SARS becomes endemic, it has provided new challenges in occupational health. The lessons we learn from SARS will help us improve our strategies to protect workers against this and other infectious disease hazards.

Beyond 'The Matrix': High-Tech Imaging for Injury Prevention

NIOSH scientists are helping to prevent deaths and injuries on the job by applying some of the same high-tech innovations that Hollywood used to create the spectacular special effects in the hit movie *The Matrix Reloaded*.

In the movie, through advanced computer imaging, a hundred versions of the sinister "Agent Smith" gang up against Keanu Reeves' character Neo in a widely publicized action scene. Technicians created the lifelike multiple images by making three-dimensional laser scans of actor Hugo Weaving's ("Agent Smith") face, digitally capturing the body movements of stunt men performing a furious martial arts fight, and then merging the facial and body images in a computer program. NIOSH is tapping similar know-how in research that will 1) help equip today's diverse work force with effective life-saving personal protective devices, 2) help ensure a good fit between an employee and his work area in activities where physical incompatibility can be dangerous, and 3) provide better ways to predict and prevent job-related musculoskeletal hazards. Further details appear at <http://www.cdc.gov/niosh/matrixeffects.html>.

NIOSH Board of Scientific Counselors One of Top Federal Advisory Committees

The Gallup Organization has named the NIOSH Board of Scientific Counselors (BSC) one of the top Scientific Technical Program Advisory Board Best Practice Committees. Members of the BSC, along with members of other federal advisory committees, completed an online survey designed to improve the effectiveness of advisory committees by measuring the extent to which they are addressing critical success factors. Results of the online Stakeholder Engagement Survey (SES) found the BSC superior on the "people," "process," and "outcome" indices. Congratulations to the BSC on this accomplishment.

Hispanic Worker Safety and Health Initiative

The U.S. Hispanic workforce is expected to increase by more than one-third over the next 10 years. Many Hispanics work in industries where tremendous physical demands and other factors put them at increased risk of occupational injury and illness (e.g. agriculture, construction, food processing). According to the Bureau of Labor Statistics' Census of Fatal Occupational Injuries, fatal injuries to Latino workers were up by 9 percent in 2001 to 891 deaths. Non-fatal injuries and illnesses affecting Latino workers have also increased. In response to this disturbing trend, NIOSH has launched a Hispanic Worker Safety and Health Initiative.



As part of the NIOSH initiative, the National Research Council (NRC), part of the National Academy of Sciences (NAS), held the *Safety is Seguridad* Workshop in San Diego, California. Furthering efforts to better communicate occupational safety and health information in Spanish, the meeting focused on developing and communicating Spanish-language occupational safety and health educational and technical material to workers and their employers. To obtain a copy of the final conference report, visit the NAS website http://www7.nationalacademies.org/besr/2003_Publications.html or call the NIOSH Publications Office (1-800-35-NIOSH).

NIOSH Pursues Hand-Vibration Studies

As far back as 1911, scientists associated vibration from hand-held tools with the risk of pain, numbing, and blanching of the fingers, known as vibration white finger. However, even now, many key aspects of the problem are not well understood, hampering efforts to identify worker populations at risk, and to design effective control measures.

NIOSH is pursuing studies to help fill those critical gaps and point to ways for effectively reducing risks of hand-vibration disorders for employees who use jackhammers, chipping hammers, power drills, and other vibrating tools. Individually, the studies focus on particularly complex, challenging areas where new data likely will furthest advance the understanding and prevention of job-related hand-vibration disorders. Collectively, the studies constitute a balanced, interlocking program of strategic research. Current projects include:

- Using advanced microscope technologies to determine if adverse effects from vibrating tools can be predicted from physical changes in the capillaries at the base of the fingernail cuticle, too small to see with the naked eye.
- Developing a computer model of stress and strain on the fingertips from vibrating tool handles, as measured by the degree to which the soft tissues of the fingertips are compressed or displaced by the vibrating handle, as another potential way to flag early warning of adverse effects.
- Assessing infrared thermal imaging of the hands as a potential method for identifying the presence and severity of hand-arm vibration syndrome, based on previous research showing that the temperature of the fingertips – after exposure to cold – returns to normal more slowly in a person with hand-arm vibration syndrome than in a person without that condition.
- Designing a test method for simultaneously measuring the impact of a chipping hammer bit and the degree of vibration from the handle; the method would give scientists a way to determine if control measures effectively minimize vibration without diminishing the chipping hammer's performance.
- Investigating the effectiveness of anti-vibration gloves through tests using an instrumented vibrating handle that simulates specific tools and vibration characteristics.

For further information on NIOSH's hand-arm vibration research, contact Ren G. Dong, NIOSH Health Effects Laboratory Division, rkd6@cdc.gov, or Aaron Schopper, NIOSH Health Effects Laboratory Division, aws0@cdc.gov.

NIOSH Partners with American Chemistry Council on TDI Research

NIOSH is collaborating with the American Chemistry Council on a study to collect and review data from occupational medical surveillance and industrial hygiene monitoring in companies that manufacture toluene diisocyanate, a building block of polyurethanes. The partnership will provide information that will help TDI manufacturers evaluate, and if necessary, enhance the protection of workers who manufacture TDI. The chemical is part of the diisocyanate family, the most commonly used class of chemicals reported to cause occupational asthma. The study was launched under an April 29, 2003, Memorandum of Understanding between NIOSH and the American Chemistry Council.

Happenings at NIOSH

NIOSH-ACTE National Safety Paper Competition

NIOSH recently announced the 2003 winner of the NIOSH-Association for Career and Technical Education (ACTE) national safety paper competition. Andrew Wermes is an instructor in the Building Trades/Carpentry Program from North Iowa Area Community College in Mason City, Iowa. He was presented with a plaque and he and his school received a monetary award. The award was announced during the ACTE's National Policy Seminar in March.

Alice Hamilton Awards

The 2003 Alice Hamilton Award was presented to four NIOSH publications of superior merit that were produced in 2002. NIOSH presents the award each year, on the basis of rigorous reviews by panels of scientific experts from outside the Institute, for outstanding NIOSH contributions in areas of biological science, engineering and physical science, human studies, and educational materials. The award is named for Dr. Alice Hamilton, a pioneering research and occupational physician.



Dr. Alice Hamilton

The four publications receiving the honor were these:

1. *The Role of tumor necrosis factor in toluene diisocyanate asthma* identifies and explores a key process in lung cells through which exposures to widely used isocyanates may cause occupational asthma, the most frequently diagnosed respiratory disease among patients visiting occupational health clinics.
2. *A random walk model of skin permeation* identifies a new mathematical model, based on two simple chemical properties, that can be used to predict whether given chemicals will enter the body through skin contact-an important tool for protecting workers from potentially harmful chemical exposures, given that skin penetration measurements are not available for most chemical used in the workplace.
3. *The impact of mental processing and pacing on spine loading* finds that mental stress increases loading on the spine during heavy lifting, a risk factor for potentially painful and disabling back injuries.
4. *Safety and Health for Electrical Traders: Student Manual* is a practical, reader-appropriate manual for electrical trades courses to help high school and other students recognize and control risks for electrocution, the third leading cause of work-related deaths among 16- and 17-year olds, before the students enter jobs involving work with electrical circuits. For more information on the 2003 Alice Hamilton Awards, visit the NIOSH website <http://www.cdc.gov/niosh/hamward.html>.

Communication Product Highlights

Respirator Basics, A-Z

A new NIOSH Fact Sheet provides basic, clearly explained information about respirators to assist employers, employees, and consumers who are considering purchasing escape hoods or other respirators to protect against potential terrorist threats, including biological and chemical agents. The illustrated Fact Sheet explains what respirators are, how they work, and what is needed for a respirator to provide the expected protection. "NIOSH Respirator Fact Sheet: What You Should Know in Deciding Whether to Buy Escape Hoods, Gas Masks, or Other Respirators for Preparedness at Home and Work" is available on the NIOSH web page at <http://www.cdc.gov/niosh/npptl/npptlrespfact.html>.

NIOSH Recommends Work Precautions for Libby Vermiculite

NIOSH issued a fact sheet with recommendations for limiting occupational exposures to asbestos associated with vermiculite from Libby, Montana. NIOSH cautions that, in general, any vermiculite that originated from a mine near Libby should be regarded as potentially contaminated with asbestos.

People may be occupationally exposed to vermiculite in work-related activities involving insulation and other construction or home materials, agricultural and horticultural materials such as potting mixes and soil conditioners, brake shoes and pads, and other products. Available data, including information collected and reported by NIOSH to miners and others in Libby in the 1980s, show that vermiculite ore mined near Libby until 1990 was contaminated with asbestos and asbestos-like fibers. Much of the vermiculite from the mine near Libby was used in the manufacture of Zonolite™ Attic Insulation, but not all Zonolite™ product was made with vermiculite from that same mine. For further information on NIOSH's recommendations for limiting occupational exposures, see the fact sheet on-line at <http://www.cdc.gov/niosh/docs/2003-141/>.

NIOSH Offers Preparedness Guidance on Building Air-Filtration

HHS Secretary Tommy G. Thompson announced the release of new guidance developed by NIOSH to help facility specialists in business and government strategically select and use air-filtration and air-cleaning systems to protect occupants in buildings from chemical, biological, or radiological attacks.



Air-filtration and air-cleaning systems are critical tools for protecting workers and other building occupants from hazardous airborne materials. The guidelines will help building designers, building engineers, and others who make technical decisions to improve air filtration in buildings such as offices, retail facilities, schools, transportation terminals, indoor malls and sports arenas.

The HHS document, "Guidance for Filtration and Air-Cleaning Systems to Protect Building Environments from Airborne Chemical, Biological, or Radiological Attacks," was developed by the Centers for Disease Control and Prevention's (CDC) National Institute for Occupational Safety and Health (NIOSH), in collaboration with a working group at the White House Office of Homeland Security, now the Department of Homeland Security.

The new document, DHHS (NIOSH) Publication No. 2003-136, is available on the NIOSH Web site at <http://www.cdc.gov/niosh/docs/2003-136/2003-136.html>.

NIOSH Fact Sheet

The NIOSH Fact Sheet provides the reader with a background to the origin of NIOSH, as well as the Institute's overall mission and strategic goals. Additionally, highlights from several recent research accomplishments and prevention, surveillance, and training and communication programs are also included. You can view the NIOSH Fact Sheet at <http://www.cdc.gov/niosh/pdfs/2003-116.pdf>.

Aggregate Training for the Safety Impaired Video

Aggregate Training for the Safety Impaired, an innovative training video to help surface miners recognize and avoid 15 serious work-related hazards, is available from NIOSH. The video follows two inexperienced "new hires" who learn the importance of safety during their first week on the job. The message is serious; the format uses humor to drive home the points. Also available is a companion "movie poster" that includes tips for trainers. For more information or to order a copy, visit the NIOSH website <http://www.cdc.gov/niosh/mining/training/videos.html>.



Upcoming Events

NORA Symposium: Working Partnerships-Research to Practice



The fourth bi-annual National Occupational Research Agenda (NORA) Symposium will be held this month, June 23-24, at the Hilton Crystal City, near Washington, D.C. The conference will convene several hundred occupational safety and health researchers, stakeholders, and policymakers from public and private sectors to review progress in the implementation of NORA. An important aspect of this conference will be the scientific presentations addressing NORA priorities. This will be a unique forum for a broad cross-section of the occupational safety and health community to learn about the variety of research accomplished during seven years of NORA. To learn more about the NORA Symposium, visit the NIOSH website <http://www2.cdc.gov/NORA/03call4sub.html>.

Control Technologies for Diesel Vehicles in Coal Mines Workshop

NIOSH will hold a workshop on July 30, 2003 at the Galt House Hotel in Louisville, Kentucky to discuss control technologies for reducing miners' exposures to particulate matter and gaseous emissions from the exhaust of diesel-powered vehicles in underground coal mines. The workshop is designed to help managers, maintenance personnel, safety and health professionals, and ventilation engineers in selecting and applying diesel particulate filters and other control technologies in their mines. Presentations and discussions will address current, state-of-the-art control technologies for diesel emissions in underground mines, diesel particulate filters in underground mining, maintenance of control technologies and strategies for the selection of diesel particulate filters. For more information on the workshop, contact Rose Ann Crotsley, NIOSH Pittsburgh Research Laboratory, at rkc6@cdc.gov.

International Fishing Industry Safety and Health Conference (IFISH II)

The second International Fishing Industry Safety and Health Conference (IFISH) will be held in Sitka, Alaska on September 22-24, 2003. IFISH is an opportunity to learn the latest developments in commercial fishing safety and injury prevention research, help build an international fishing safety coalition and promote action to prevent injury in the commercial fishing industry. A stimulating program will include keynote speakers, the presentation of scientific papers and posters, and workshops. To learn about the conference, visit the IFISH II website <http://www.uaf.edu/seagrant/amsea/ifish/>.

NOIRS 2003



NIOSH, in association with its public and private sector partners, will host the third National Occupational Injury Research Symposium (NOIRS) on October 28-30, 2003 in Pittsburgh, Pennsylvania. This symposium is a means of implementing the National Occupational Research Agenda for traumatic occupational injuries. Additionally, NOIRS will be a great source for developing collaborations, identifying best practices, and sharing innovative technological approaches to injury research and prevention. The symposium will consist of contributed oral presentations in concurrent sessions, organized sessions around topics of special interest, and poster presentations. For more information on NOIRS 2003, visit the NIOSH website <http://www.cdc.gov/niosh/noirs/noirsmain.html>.

National Chronic Obstructive Pulmonary Disease (COPD) Conference

The first National Chronic Obstructive Pulmonary Disease (COPD) Conference will be held in November 13-15, 2003 in Arlington, Virginia. The goal of the conference is to provide scientific and societal background concerning COPD to further education, awareness, and improved care in the United States. The conference will provide an opportunity to meet and to actively participate in state-of-the-art workshops, lectures, and meetings. For more information, visit the conference website http://www.uscopd.com/index_confer.html.

To receive NIOSH documents or more information about occupational safety and health topics, contact NIOSH:

1-800-35-NIOSH

Fax: (513) 533-8573

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or visit the NIOSH Web site at www.cdc.gov/niosh

